

## CLAIMS

1. A method for determining a size value associated with an object at runtime comprising:

5 executing a computer program;

associating a size value with an object during execution of said computer program; and

retrieving said size value when a size operator is executed for said object during execution of said computer program.

10 2. The method of claim 1 wherein said size value is a number of characters in said object, if said object is a string.

15 3. The method of claim 1 wherein said size value is a number of elements in said object, if said object is an array.

4. The method of claim 1 wherein said size value is a value determined by a function of said object, if said object is an instance of a class.

20 5. The method of claim 4 wherein said retrieving comprises:  
providing an instance of said size operator for said class; and  
calling said instance of said size operator.

25 6. A method for determining a type value associated with an object at runtime comprising:

executing a computer program;  
associating a type value with an object during execution of said computer  
program; and

retrieving said type value when a type operator is executed for said object during  
5 execution of said computer program.

7. The method of claim 6 wherein said type value is "string", if said object is  
a string.

10 8. The method of claim 6 wherein said type value is a number, if said object  
is a string.

9. The method of claim 6 wherein said type value is a value determined by a  
function of said object, if said object is an instance of a class.

15 10. The method of claim 9 wherein said retrieving comprises:  
providing an instance of said type operator for said class; and  
calling said instance of said type operator.

20 11. A runtime size information determiner comprising:  
an association unit configured to associate a size value with an object during  
execution of a computer program; and  
a retrieval unit configured to retrieve said size value when a size operator is  
executed for said object during execution of said computer program.

12. The runtime size information determiner of claim 11 wherein said size value is a number of characters in said object, if said object is a string.

13. The runtime size information determiner of claim 11 wherein said size value is a number of elements in said object, if said object is an array.

14. The runtime size information determiner of claim 11 wherein said size value is a value determined by a function of said object, if said object is an instance of a class.

15. The runtime size information determiner of claim 14 wherein said retrieval unit comprises:

an instance of said size operator for said class; and

an instance calling unit configured to call said instance of said size operator.

16. A runtime type information determiner comprising:  
an association unit configured to associate a type value with an object during execution of a computer program; and

a retrieval unit configured to retrieve said type value when a type operator is executed for said object during execution of said computer program.

17. The runtime type information determiner of claim 16 wherein said type value is "string", if said object is a string.

18. The runtime type information determiner of claim 16 wherein said type value is a number, if said object is a string.

19. The runtime type information determiner of claim 16 wherein said type value is a value determined by a function of said object, if said object is an instance of a class.

20. The runtime type information determiner of claim 19 wherein said retrieval unit comprises:

10 an instance of said type operator for said class; and  
an instance calling unit configured to call said instance of said type operator.

21. A computer program product comprising:

15 a computer usable medium having computer readable program code embodied therein configured to determine a size value associated with an object at runtime, said computer program product comprising:

computer readable code configured to cause a computer to execute a computer program;

20 computer readable code configured to cause a computer to associate said size value with an object during execution of said computer program; and

computer readable code configured to cause a computer to retrieve said size value when a size operator is executed for said object during execution of said computer program.

22. The computer program product of claim 21 wherein said size value is a number of characters in said object, if said object is a string.

23. The computer program product of claim 21 wherein said size value is a  
5 number of elements in said object, if said object is an array.

24. The computer program product of claim 21 wherein said size value is a value determined by a function of said object, if said object is an instance of a class.

10 25. The computer program product of claim 24 wherein said retrieval unit comprises:

computer readable code configured to cause a computer to provide an instance of said size operator for said class; and

15 computer readable code configured to cause a computer to call said instance of said size operator.

26. A computer program product comprising:

20 a computer usable medium having computer readable program code embodied therein configured to determine a type value associated with an object at runtime, said computer program product comprising:

computer readable code configured to cause a computer to execute a computer program;

computer readable code configured to cause a computer to associate said type value with an object during execution of said computer program; and

computer readable code configured to cause a computer to retrieve said type value when a type operator is executed for said object during execution of said computer program.

5           27.     The computer program product of claim 26 wherein said type value is “string”, if said object is a string.

28.     The computer program product of claim 26 wherein said type value is a number, if said object is a string.

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29.     The computer program product of claim 26 wherein said type value is a value determined by a function of said object, if said object is an instance of a class.

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30.     The computer program product of claim 29 wherein said retrieval unit comprises:

computer readable code configured to cause a computer to provide an instance of said type operator for said class; and

computer readable code configured to cause a computer to call said instance of said type operator.

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